Business Development Manager, Ducon Space Co. (June 2023- Present)

1. Conducting In-Depth Research:

- Conduct comprehensive research on emerging aerospace technologies, materials, and trends.
- Extract insights to provide clients with well-informed recommendations for strategic decision-making.

2. Creating Comprehensive Technical Reports:

- Develop detailed reports that encapsulate thorough analysis, findings, and actionable recommendations.

3. Representation at Paris Airshow:

- Represented Ducon Space Co. at renowned industry events such as the Paris Airshow (Le Bourget).
- Engage with industry leaders, showcasing our expertise and evaluating potential startup projects.

4. Facilitating Collaborations:

- Facilitate collaborative efforts between aerospace manufacturers and Ducon Space Co.
- Help in joint ventures and partnerships to foster innovation, technology exchange, and industry advancement.

Research Fellow, Subatech, IMT Atlantique, Nantes, France (5 years)

1. Reference Designs and Compatibility Assessment:

- Developed reference designs, compatibility assessments, and acceptance criteria for nuclear waste disposal.
- Evaluated existing designs, proposing enhancements to ensure long-term safety and performance of waste disposal systems.

2. Molecular Dynamics (MD) Simulations:

- Utilized atomistic Molecular Dynamics (MD) simulations to study nuclear waste material's molecular-level behavior and interactions.
- Extracted insights into structural and dynamic properties, aiding in the optimization of waste disposal system designs.

3. Enhanced MD Simulation Efficiency with GROMACS:

- Introduced GROMACS, a new MD software, to the research team.
- Achieved a substantial 40% improvement in simulation run efficiency, enabling faster data generation and broader scenario exploration.

Research Fellow, Subatech, IMT Atlantique, Nantes, France (5 years)

4. Multitasking Codes for Supercomputer Simulations:

- Developed multitasking codes for supercomputer simulations, optimizing computational resource utilization.
- Reduced simulation time, enhancing productivity and enabling thorough studies of waste material behavior.

5. Innovative Molecular Models:

- Independently designed molecular models for clays, organic molecules, and radionuclides.
- Models were pivotal in understanding inter-component interactions and behavior under diverse environmental conditions.

6. Technical Data Analysis and Reporting:

- Led technical data analysis, resolved discrepancies, and prepared comprehensive reports.
- Analyzed experimental and simulation data, derived trends, and drew meaningful conclusions to inform decision-making.

Research Fellow, Subatech, IMT Atlantique, Nantes, France (5 years)

7. Effective Presentation and Stakeholder Engagement:

- Presented research findings to peers, operations staff, and stakeholders at conferences, workshops, and internal meetings.
- Communicated intricate concepts and research outcomes adeptly, fostering knowledge exchange and discussion.

8. Engagement with Stakeholders and Funding Negotiations:

- Conducted follow-up meetings with government agencies, industry representatives, and collaborators.
- Discussed project progress, addressed concerns, and negotiated funding grants to sustain ongoing research.

9. Educational Contribution and Practical Sessions:

- Assisted in nuclear-related lectures and practical sessions for master's students.
- Shared knowledge, provided guidance, and deepened understanding of nuclear waste management principles.

Research Fellow, Subatech, IMT Atlantique, Nantes, France (5 years)

Overall Expertise in Nuclear Waste Management:

- My active participation in nuclear waste disposal research projects encompassed a diverse array of roles, from technical analysis and simulations to reporting and stakeholder engagement. These experiences fortified my expertise and dedication to ensuring the secure and sustainable management of nuclear waste.

- Additionally, I had the privilege of presenting at esteemed conferences such as the Clay Mineral Society (CMS, USA) and Goldschmidt. These platforms facilitated impactful discussions, honing my ability to communicate intricate ideas effectively and fostering engagement with fellow researchers and industry experts.

Research Internship, Subatech, IMT Atlantique, Nantes, France (6 months)

1. GEMS Software Introduction and Installation:

- Introduced and set up the GEMS software, a widely used tool for thermodynamic modeling and calculations in geochemical systems.
- This software enabled comprehensive analysis of chemical reactions and equilibria within complex systems.

2. Designing and formulating new compositions of cement pastes using the GEMS software:

- Explored various mixtures and compositions of cement pastes through the GEMS software.
- Studied the properties and behavior of these mixtures under different conditions.
- The software facilitated the optimization of cement paste compositions tailored for specific applications.

3. Validating GEMS results through comparison with PHREEQC software

- Ensured accuracy and reliability by cross-validating results obtained from GEMS with those from PHREEQC.
- PHREEQC is another well-known geochemical modeling software, reinforcing the credibility of the thermodynamic calculations conducted with GEMS.

Research Internship, Subatech, IMT Atlantique, Nantes, France (6 months)

4. Investigating the effect of Ordinary Portlandite Cement (OPC) on various solutions:

- Led a project focused on understanding interactions between OPC and different solution compositions.
- Explored how these interactions influence cement hydration, durability, and other relevant properties.
- This research contributed to the knowledge base for optimizing cement performance in practical applications.

5. Conducting a thesis on the thermodynamic modeling of experimental dissolution data of cements:

- Executed a comprehensive thesis involving both experimental work and computational modeling.
- Collected dissolution data through experiments and employed thermodynamic modeling techniques for analysis.
- The goal was to unravel the intricate thermodynamic controls underlying cement dissolution processes.

Internship, Indira Gandhi Center for Atomic Research (IGCAR), India

1. Breeder Reactor Functionality Familiarization:

- Gained comprehensive insight into breeder reactor functionality and operation through Reactor Design group participation.
- Acquired understanding of design principles, safety considerations, and operational specifics unique to breeder reactors.

2. Active Role in Safety Checks and Maintenance:

- Actively engaged in conducting routine safety checks and maintenance tasks for efficient PFBR facility operation.
- Developed familiarity with safety protocols and maintenance procedures, upholding stringent safety standards.

3. Comparative Analysis of FBTR and PWR:

- Prepared comprehensive report comparing Fast Breeder Test Reactor (FBTR) and Pressurized Water Reactor (PWR).
- Detailed analysis of features, performance, and safety considerations enriched understanding for informed reactor design decisions.

Internship, Indira Gandhi Center for Atomic Research (IGCAR), India

4. Interpreting XRD and SEM Data:

- Analyzed data from X-ray Diffraction (XRD) and Scanning Electron Microscope (SEM) analysis.
- Extracted insights into the structure, composition, and behavior of reactor materials, aiding reactor design and performance comprehension.

5. Radiation Monitoring for Safety:

- Monitored radiation levels using Geiger counters and equipment.
- Ensured safe work environment, identified radiation hazards, and cultivated radiation safety awareness.

6. Promotion of Safety Protocols:

- Introduced essential safety protocols, emphasizing their role in accident prevention, risk mitigation, and personnel well-being.

7. Effective Risk Identification and Analysis:

- Proficiently identified and analyzed potential risks linked to PFBR operations.
- Conducted thorough risk assessments throughout reactor operation stages, from design to decommissioning.

Internship, Indira Gandhi Center for Atomic Research (IGCAR), India

8. Advocating Safety Culture:

- Emphasized fostering a robust safety culture within the team.
- Actively promoted safety awareness, encouraged proactive safety approaches, and facilitated open safety communication.

9. Incident Investigation and Learning:

- Acquired skills to identify root causes and analyze contributing factors in incidents.
- Formulated corrective actions for recurrence prevention, contributing to continuous operational improvement.

Overall Expertise in Reactor Design:

My Reactor Design group experience for PFBR provided a holistic grasp of nuclear engineering principles, reactor operations, safety protocols, and material analysis techniques. These insights and skills were pivotal for effective contribution to the safe and efficient operation of nuclear facilities.

Internship, Hindustan Aeronautics Limited (HAL), India

1. LCA Division (Light Combat Aircraft):

- Studied lightweight aircraft materials and their applications in aircraft design and manufacturing.
- Learned about the concepts, principles, objectives, functionality, and operation of the division.
- Gained insights into the production processes, quality control measures, and compliance with industry standards.
- Observed the coordination between different teams to ensure timely and efficient aircraft production.

2. Engine Division:

- Explored high-temperature resistant materials used in aircraft engines and their significance in engine design.
- Learned about the principles of material selection, testing procedures, and quality control in engine manufacturing.
- Gained a comprehensive understanding of engine components, their functionality, and the overall operation of various engine systems.
- Assisted in quality assurance activities, ensuring adherence to specifications and identifying non-conformities.

Internship, Hindustan Aeronautics Limited (HAL), India

3. Assisting Quality Control Inspection Officer & Production Manager:

- Worked closely with the Quality Control Inspection Officer to understand quality control processes and inspections.
- Assisted in conducting inspections, documenting findings, and ensuring compliance with quality standards.
- Collaborated with the Production Manager to observe production processes, workflow management, and coordination of activities to meet production targets.

4. Assisting Procurement Manager:

- Provided support to the Procurement Manager in sourcing and procuring materials and components for aircraft production.
- Assisted in supplier evaluation, negotiation, and contract management.
- Gained insights into the procurement processes, including requests for quotations, purchase orders, and inventory management.
- Learned about the importance of cost-effectiveness, quality assurance, and on-time delivery in the procurement function.

Internship, Hindustan Aeronautics Limited (HAL), India

Overall Experience:

Throughout these divisions, I actively engaged in learning and contributing to various facets of aerospace operations. It not only deepened my insights into the aerospace field but also broadened my practical understanding of teamwork, quality control, and the intricate processes behind aircraft production.